

A NEW SPECIES OF TROPIDURINE LIZARD (SQUAMATA: TROPIDURIDAE) FROM LOS ANDES OF NORTHERN CHILE

UNA NUEVA ESPECIE DE LAGARTO TROPIDURINO (SQUAMATA: TROPIDURIDAE) DE LOS ANDES DEL NORTE DE CHILE.

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ABSTRACT

A new species of lizard, *Liolaemus juanortizi*, is described from the Puna de Atacama province of northern Chile. This species is distinguished by its juxtaposed weakly keeled dorsal scales, a relatively short hindlimb (when limb adpressed fourth toe does not pass shoulder), smooth temporal scales, a gray ventral color in females, and a brilliant black ventral color in adult males.

KEYWORDS: *Liolaemus juanortizi* n. sp., Reptilia, Tropiduridae, Chile.

RESUMEN

Se describe una nueva especie chilena de tropidurino, *Liolaemus juanortizi*, de la provincia Puna de Atacama de la Cordillera de los Andes, al este de la III Región, en la Quebrada Aguas Blancas, a 3.800 m de altura. La nueva forma se caracteriza por poseer las escamas dorsales juxtapuestas y levemente carenadas, la extremidad posterior relativamente corta (cuarto dedo del pie no sobrepasa el hombro), las escamas temporales lisas, y una coloración del vientre gris en hembras y machos juveniles y negra brillante en machos adultos.

PALABRAS CLAVES: *Liolaemus juanortizi* n. sp., Reptilia, Tropiduridae, Chile.

INTRODUCTION

The genus *Liolaemus* Wiegmann, 1834 has

reached a tremendous species diversification within South America —no less than 100 species are recognized (Cei, 1986). During the course of field research sponsored in 1988 by the Museo Regional de Atacama to Río Aguas Blancas (27°37'S; 69°31'W), Copiapó, III Región, Chile (Fig. 1), Jorge Moreno collected specimens of a undescribed tropidurine lizard.

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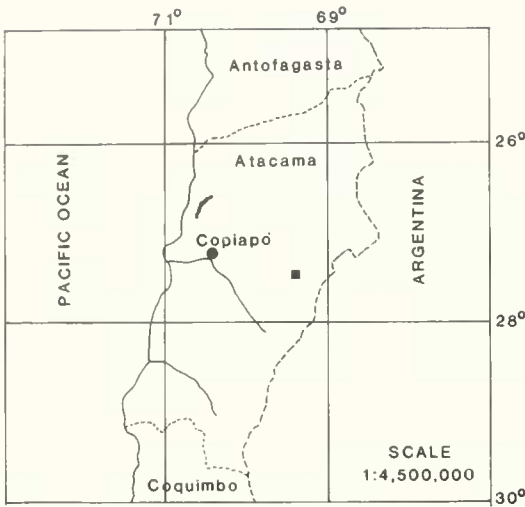


FIG. 1. Distribution (closed square) of *Liolaemus juanortizi* in Chile.

A detailed study of the specimens revealed that they represent a new species of the *Liolaemus*. Because viewpoints about continued growth throughout life in reptiles varies (see Andrews, 1982 and Porter, 1972) body proportions rather than actual measurements were preferred for making comparisons between samples and species. Herein we describe this species as:

Liolaemus juanortizi sp. nov.

HOLOTYPE

Museo Regional de Atacama (MRA) 0139, an adult male from Quebrada Aguas Blancas, 3800 m, Copiapó, III Región, Chile, collected by Jorge Moreno on December 1988.

PARATYPES

MRA 0140, an adult female; MRA 0145, a juvenile female; MRA 0148, a juvenile male; MRA 0149, an adult male; MRA 0150, an adult female. All collected by Jorge Moreno at the same locality and date as the holotype.

DIAGNOSIS

A moderate *Liolaemus* which may be distinguished from other *Liolaemus* by the following combination of characters: (1) juxtaposed weakly keeled dorsal scales; (2) smooth temporal scales; (3) a relatively short hindlimb (when limb adpressed, fourth toe does not pass shoulder); and (4) a gray ventral color in adult females and juveniles, and a brilliant black ventral color in adult males.

DESCRIPTION OF HOLOTYPE:

Body stout and compressed dorsoventrally, when hindlimb adpressed fourth toe does not pass shoulder; head length about one-fifth of snout-vent length (SVL); tail 1.5 times longer than SVL (Table I); neck folds well developed; antehumeral fold present; gular fold absent; rostral scale two times wider than high; two post-rostral scales; nasal scales in contact with rostral and separated from supralabials by one scale; nostrils smaller than the nasal scales and opening anterolaterally at a point one-third the distance between eye and tip of snout; 4 internasals; 2 unpaired scales on the snout surrounded by 2 paired scales; frontal undivided; 2 prefrontals and 2 postfrontals; interparietal pentagonal with a small pineal eye and of the size of each parietal; prefrontals and frontal of similar size; postfrontals half the size of frontal; 3 enlarged supraoculars on the left side and 3 on the right side, separated from superciliaries by 2 rows of small scales; 6 elongated, overlapping superciliaries on the left side and 7 on the right side; 11 palpebral scales; subocular scale enlarged, undivided, and separated from supralabials by a single row of scales; 5 supralabials and 5 infralabials on each side; temporal scales smooth; ear opening elliptical with 3 prominent tympanic scales; posterior border of ear with granular scales; nuchal scales weakly keeled, subimbricated and smaller than dorsals; mental as wide as rostral, but higher and in contact with 4 scales; 2 divergent rows of 4 postmentals; gulars smooth, imbricated and smaller than ventral scales; side of neck with smooth granular scales; dorsal scales ovoid, juxtaposed and slightly keeled; scales on side of body smaller than dorsals, smooth and juxtaposed; ventral scales squarish, same size as dorsal, smooth and imbricated; upper caudal

scales triangular, keeled and imbricated; distal caudal scales squarish, keeled and imbricated; ventral caudal scales triangular, smooth and imbricated; dorsal forelimb scales slightly keeled and imbricated, with an apical scale pit; ventral forelimb scales granular on the proximal part and

ovoid on the distal part; hindlimb scales similar to forelimb scales; ventral scales of the hand and foot tricarinated; scales around middle body 59; subdigital lamellae of the fourth finger 20, tricarinated; subdigital lamellae of the fourth toe 25, tricarinated; 4 anal pores.

TABLE 1. Measurements (mm) (following Peters, 1964, system of measurements) and meristic characters of *Liolaemus juanortizi*.

Character	Holotype		Paratypes			
	MRA 0139	MRA 0140	MRA 0145	MRA 0148	MRA 0149	MRA 0150
Head length	21.75	16.80	10.90	14.00	21.55	16.90
Head width	18.90	14.40	9.15	11.00	18.20	13.50
Head height	12.20	9.05	6.85	7.85	12.80	8.45
SVL	94.40	76.25	46.70	61.00	94.25	84.10
Axilla-groin length	46.75	38.85	23.20	29.50	46.05	45.05
Forelimb length	32.35	24.90	16.00	21.80	49.00	26.35
Hindlimb length	51.65	40.00	27.85	36.85	30.40	41.85
Ear-groin length	63.10	52.25	30.90	41.50	62.10	59.60
No. scales around middle of body	59	57	53	56	59	55
Subdigital lamellae on 4th finger	20	20	20	24	22	23
Subdigital lamellae on 4th toe	25	26	26	26	29	29
Tail length	155.00	—	—	—	—	—

In life, the dorsum is brown with no pattern of marks or bands; sides of body gray; dorsal surface of limbs brown with small irregular white spots; venter brilliant black; ventral surface of limbs and tail gray with irregular black spots (Fig. 2).

VARIATION

Table I presents variation on morphometric characters in the specimens collected (holotype and paratypes), and variation in lepidosis as well. Table II summarizes the data of Table I as ranges of variation for ratios computed on various features of the holotype and paratypes.

Among the paratypes, there are 2-3 unpaired scales on the snout; 3-4 enlarged supraoculars; 6-7 superciliaries; 5-6 supralabials; 5-6 infralabials; 3 tympanic scales; 3-4 rows of postmentals; 53-59 scales around middle body; 20-24 subdigital lamellae on the fourth finger and 26-29 subdigital lamellae on the fourth toe. Frontal

is divided on MRA 0140 and MRA 0150. MRA 0149 (adult male), MRA 0140 and 0150 (adult females) and MRA 0145 (juvenile female) have a well developed auricular scale. The adult male (MRA 0149) and juvenile male (MRA 0148) has 4 and 3 orange anal pores, respectively.

Coloration in life of MRA 0140, MRA 0145 and MRA 0148 is brown on the dorsum and gray on the venter. MRA 0149 venter's is completely black. In MRA 0145 three dorsal black stripes extend from behind the head to the distal portion of the tail. The central (vertebral) stripe is a continuous band. The two lateral stripes are discontinuous bands, formed by two black spots surrounded of white which converge into one black spot at the beginning of the tail. In the juvenile male only traces of lines remain. Irregular black spots are present on the venter and ventral surfaces of the limbs and tail of the adult females and juveniles female and male. A juvenile male (MRA 0148) has the gular and ventral regions almost completely black.

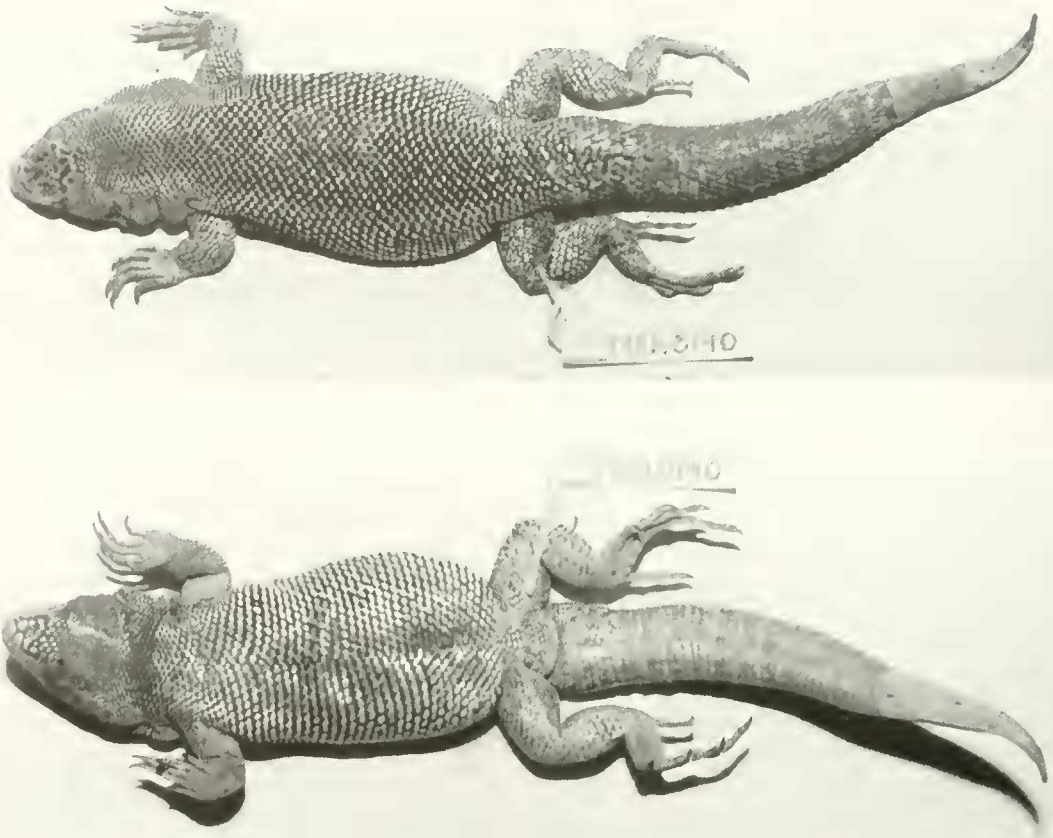


FIG 2. *Liolaemus juanortizi*, paratype MRA 0140, and adult female, 76 mm SVL.

TABLE II. Comparison of ranges of variation for ratios computed on morphometric features and scutellational characters of *Liolaemus juanortizi*, *Liolaemus lorenmulleri* and *Liolaemus paulinae* (from Hellmich, 1950 and Donoso-Barros, 1961 respectively). Numbers within parentheses represent means.

Character	<i>L. juanortizi</i> (n = 6)	<i>L. lorenmulleri</i> (n = 4)	<i>L. paulinae</i> (n = 10)
Head length/SVL	0.20-0.23 (0.22)	0.22-0.24 (0.23)	0.24-0.30 (0.27)
Head width/SVL	0.16-0.20 (0.19)	0.19-0.21 (0.20)	0.19-0.25 (0.22)
Head height/SVL	0.10-0.15 (0.13)	0.14-0.17 (0.15)	0.13-0.20 (0.16)
Forelimb length/SVL	0.31-0.36 (0.33)	0.35-0.41 (0.38)	0.32-0.49 (0.39)
Hindlimb length/SVL	0.50-0.60 (0.55)	0.63-0.67 (0.65)	0.46-0.78 (0.63)
Forelimb length/head length	1.41-1.56 (1.50)	1.47-1.77 (1.68)	1.20-1.62 (1.43)
Hindlimb length/head length	2.27-2.63 (2.45)	2.63-3.04 (2.82)	1.77-2.60 (2.31)
Dorsal scale disposition	juxtaposed	imbricated	—
Scales on dorsal forelimb	slightly keeled	keeled	keeled
Scales on dorsal hindlimb	slightly keeled	keeled	keeled

ETYMOLOGY:

The present species is dedicated to Dr. Juan C. Ortiz, herpetologist and friend, whose contribution to the taxonomy and knowledge of the Chilean herpetofauna has been considerable.

DISTRIBUTION:

This species is known only from the type locality.

REMARKS:

Liolaemus juanortizi inhabits what has been called the Puneña Province by Cabrera and Willink (1980), which is characterized by a dry and cold climate with large temperature fluctuations. The dominant vegetation are small shrubs (*Ephedra* sp., *Adesmia* sp. and *Critaria andicola*), between which is bare soil most of the year. *L. juanortizi* uses these shrubs to hide even though it prefers to do it under rocks. This lizard is easy to capture when approach it does not escape. *L. juanortizi* is omnivorous. It eats insects (ants, homoptera and hemiptera) and vegetation (mainly leaves, flowers and fruits). Sympatric with *L. juanortizi*, we found another tropidurine lizard which is being described by Ortiz (Moreno pers. comm.)

DISCUSSION

Several species groups have been suggested for the different *Liolaemus* species (Cei, 1979, 1986; Laurent, 1983, 1984, 1985; Ortiz, 1981) based on overall similarity, recognized subspecies and discriminant analysis of morphometric data. Synapomorphic states (shared derived homologies) for most of the suggested groups, except the subgenus *Ortholaemus* (Laurent, 1984), are not available; therefore, placement of *L. juanortizi* as into one of these groups seems premature:

Based on the distribution of *L. juanortizi* and overall similarity of various features between *L. juanortizi* and other *Liolaemus* species (Cei, 1986; Donoso-Barros, 1966; Peters and Donoso-

Barros, 1970), we decided to compare *L. juanortizi* with *L. lorenmulleri* and *L. paulinae*.

We have not had the opportunity to examine the type species of *L. lorenmulleri* and *L. paulinae*; therefore, to distinguish them from *Liolaemus juanortizi*, we have relied on their original descriptions (Hellmich, 1950; Donoso-Barros, 1961, respectively), and on descriptions and notes provided in later publications (Donoso-Barros, 1966; Peters and Donoso-Barros, 1970). *Liolaemus juanortizi* differs from *L. lorenmulleri* in having juxtaposed slightly keeled dorsal scales (an undescribed character for *L. paulinae*). *L. juanortizi* may be distinguished from *L. paulinae* in having enlarged supraocular scales. Temporals scales are weakly keeled in *L. lorenmulleri* and *L. paulinae*, but smooth in *L. juanortizi*. *Liolaemus juanortizi* differs also from *L. paulinae* in having an antehumeral fold.

Morphometric characters also allowed differentiate *Liolaemus juanortizi* from *L. lorenmulleri* and *L. paulinae*. *L. juanortizi* differs from *L. lorenmulleri* in having a relatively shorter hindlimb (hindlimb length/head length), and from *L. paulinae* in having a relatively smaller head (head length/SVL; head width/SVL) (Table II). *L. juanortizi* reaches a larger adult length (76-94 mm SVL) than *L. paulinae* (40-52 mm SVL) and *L. lorenmulleri* (57-79).

Differences in coloration distinguish *Liolaemus juanortizi* from the other two taxa. The venter in *L. lorenmulleri* is brownish-yellow. In *L. paulinae* the venter is grayish white with reddish tints. *L. lorenmulleri* has the ventral surface of the limbs brownish yellow; in *L. juanortizi* this region is gray with irregular black spots. The juveniles of *L. paulinae* have two dorsal pale bands at each side of the dorsum; in *L. juanortizi*, the juveniles have three dorsal black stripes along the dorsum and tail.

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REFERENCES

- ANDREWS, R.M. (1982): Patterns of growth in reptiles. In *Biology of the Reptilia* vol. 13, p. 273-320. Gans, C., Pough, F.H., Eds., Academic Press, New York.
- CABRERA, A.L., WILLINK, A. (1980): *Biogeografía de América Latina*. Secretaria General de la Organización de los Estados Americanos Programa Regional de Desarrollo Científico Tecnológico, Washington, D.C.
- CEI, J.M. (1979): The Patagonian herpetofauna. In *The South American herpetofauna: its origin, evolution and dispersal*, p. 309-339. Duellman, W.E. Ed., Mus. Nat. Hist. Monograph 7. Lawrence: Univ. Kansas Press.
- CEI, J.M. (1986): Reptiles del centro, centro-oeste y sur de la Argentina. *Herpetofauna de las zonas áridas y semiáridas*. Museo Regionale di Scienze Naturali, Torino. Monografie 1V.
- DONOSO-BARROS, R. (1961): Three new lizards of the genus *Liolaemus* from the highest Andes of Chile and Argentina. *Copeia* 1961: 387-391.
- DONOSO-BARROS, R. (1966): *Reptiles de Chile*. Ed. Univ. de Chile, Santiago.
- HELLMICH, W. (1950): Die Eidechsen der Ausbeute Schröder (Gattung *Liolaemus*, Iguan.). *Veröff. Zool. Staatssamml. München* 1: 129-194.
- LAURENT, R.F. (1983): Contribución a la estructura taxonómica del género *Liolaemus* Wiegmann (Iguanidae). *Boln. As. herp. arg.* 1: 16-18.
- LAURENT, R.F. (1984): On some Iguanid genera related or previously confused with *Liolaemus* Wiegmann. *J. Herpetol.* 18: 357-373.
- LAURENT, R.F. (1985): Segunda contribución al conocimiento de la estructura del género *Liolaemus* Wiegmann (Iguanidae). *Boln. As. herp. arg.* 1:1-37.
- ORTIZ, J.C. (1981): Révision taxinomique et biologie des *Liolaemus* du groupe *nigromaculatus* (Squamata-Iguanidae). Thèse és Sciences, Université Paris VII.
- PETERS, J.A. (1964): *Dictionary of herpetology*. Hafner Publ., New York.
- PETERS, J.A., DONOSO-BARROS, R. (1970): Catalogue of the Neotropical Squamata. Part II. Lizards and Amphisbaenians. *Bull. U.S. Nat. Mus.* 297:1-293.
- PORTER, L.R. 1972. *Herpetology*. W.B. Saunders, Philadelphia. Wiegmann, A.F.A. 1834. *Herpetología mexicana -sers descriptio amphibioborum Noval Hispanie*. Berlin, Tip. Lüderitz.